

Imparting skill development training to the Lakadong turmeric farmers of the Jaintia Hills of Meghalaya

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Prof. Debjani Roy, IGNOU Institute for Vocational Education and Training, Shillong, dbjnr8@gmail.com &

Dr. Jayashree Kurup, Education Development North East Region Unit, IGNOU, New Delhi, jkurup1@rediffmail.com

INTRODUCTION

The history of human civilization is inextricably bound with society's connection to the land. Agriculture being intimate and fundamental to human existence has been the prime activity of every culture and civilization throughout the history of mankind. Given that agriculture knowledge systems form the basis of the sustenance of the community, indigenous knowledge forms an important component of this system. Understanding and appreciation of indigenous knowledge systems (IKS) are essential for promoting sustainable agriculture development. There is no dearth of arguments strongly supporting the claim of indigenous knowledge to being a "science" because this knowledge is generated and transformed through a systematic process of observation, experimentation, and adaptation. The fact that traditional knowledge has evolved over a period of time and continues to do so keeping in mind the best interests of the local communities, suited to and coping with the local socio-economic and agro-environmental conditions it can be viewed as a significant resource which could contribute to the increased efficiency, effectiveness and sustainability of the development process. James D. Wolfensohn, President of The World Bank (2000) has aptly remarked "Indigenous knowledge is an integral part of the culture and history of a local community. We need to learn from local communities to enrich the development process".

Agriculture will remain a major contributor to the economies of most countries, an effective and sustainable strategy for poverty reduction, particularly in developing regions since a vast majority of the workforce derive their livelihood from it. India is primarily an agrarian society. Even today almost 70% of the population depend on agriculture which needs to be sustainable. The term "sustainable agriculture for nation development" has thus provided a sense of direction and an urgency, which has sparked much excitement and innovative thinking in the agricultural world. Flora (1992) and Kloppenburg (1991) have remarked, IK could be used as the starting point in the construction of a truly alternative agriculture. Farmers adopt a wide range of indigenous agricultural and land use practices based on generations of experience, informal experiments and intimate understanding of their biophysical and socio-cultural environments which cannot be ignored.

India is a country with diverse agro-climatic habitats, large tracts of arable land, crops and cropping pattern suitable for growing location specific crops being cultivated by hundreds of ethnic farming communities with their own indigenous technologies. Therefore, crop cultivation practices vary not only from one agro-climatic zone to another but also from one ethnic group to another. These ethnic farming communities are the store house of indigenous knowledge regarding the overall management of indigenous crops. The uniqueness of this knowledge is that it is environmentally benign, ecologically protective, socially acceptable, economically viable and sustainable.

North-East India is a rich storehouse of indigenous agricultural practices and local varieties of crops. The region is comprised of eight states, lying between 21.5°N to 29.5° N latitude and

85.5° E to 97.5° E longitude. The northeastern region is rich in biological diversity and contains more than one-third of the country's total biodiversity. This biodiversity and variability of the ecosystem are used and conserved by traditional communities through various informal institutions and using traditional ecological knowledge systems. The region is rich in genetic diversity of indigenous crops like ginger, chilly and turmeric which is slowly and steadily being lost to invasive high yielding varieties.

The state of Meghalaya in the north-eastern region covers an area of 22,489 sq.km with a population of 1,760,626 (1991 census). The State lies within 25°1' and 26°5'N latitudes and 85°49' and 92°52'E longitudes. The state is made up of the Khasi, Jaintia and Garo Hills and the capital is Shillong located at 1500m asl. The economy of Meghalaya is basically agrarian as it is rural with agriculture playing a predominant role in the state's economy. Since, 70% of the state's population depend on agriculture, employment and income generation also depend on agriculture developmental activities to a great extent.

The present paper is the report on the Lakadong variety of turmeric which has the highest curcumin content in the world (7.4%) is native to the Lakadong area of the Jaintia Hills district of Meghalaya (Lat 25° 10' 60N ; Long 92° 16' 60E; Alt 610 m).

TURMERIC

The world today is discovering the magic of Turmeric. In India its use dates back to nearly 4000 years when it was used as a culinary spice and had some religious significance. India is the world's largest producer, consumer and exporter of turmeric with an annual production of about 658,400 tonnes. Its roots, mostly known as rhizomes contains yellow pigments called curcuminoids, colouring principle of which is curcumin and is responsible for many medicinal properties (Aggarwal et al 2004; Joe et al 2004)). Recent researches are focused on turmeric's antioxidant, hepato-protective, anti-inflammatory, anti-carcinogenic and anti-microbial properties, in addition to its use in cardiovascular disease and gastrointestinal disorders.

INDIGENOUS LAKADONG TURMERIC

The Lakadong turmeric has an immense potential for commercialisation for its high curcumin content. However, farmers of Lakadong area experienced that when this variety of turmeric is cultivated outside the Jaintia hills the quality deteriorates thereby posing a limitation for cultivation outside the traditional Lakadong area. Although there is no scientific report on such agro-climatic effect on the curcumin content of Lakadong turmeric in particular, there are reports, which show that agro-climatic factors may significantly affect the curcumin content in turmeric. Given the multifarious use of turmeric, the importance of the Lakadong turmeric for its curcumin content and the probable agro-climatic effect if grown outside the Lakadong area, the IGNOU Institute for Vocational Education and Training (IIVET), located in Shillong, Meghalaya under its mandate for Indigenous Knowledge and Technology (IKT) started collecting information on Lakadong turmeric. Information revealed that although the variety has high demand in the global market, the farmers – mostly women are unable to increase the yield due to their ignorance about systematic scientific agricultural practices, lack of market linkages and entrepreneurial drive.

Based on the difficulties and requirements of the indigenous farmers of the Lakadong area, IIVET started interacting with the experts in the field of agriculture for formulating a scientific training programme on Production and Post harvest Technology for Lakadong turmeric; the officials of Agriculture Department of Government of Meghalaya to help the farmers for better linkages with the packaging industry and marketability of their produce; and the Meghalaya Cooperative Apex Bank Ltd. to provide financial assistance.

A. Production and Post-Harvest Technology Training Programme for Indigenous turmeric farmers conducted by IIVET

Based on the inputs from the farmers a training programme on Production and Post-Harvest Technology for Lakadong Turmeric for enhancing the farmers' skill and knowledge and to improve the productivity of the Lakadong turmeric was formulated.

25 farmers underwent the training imparted by the agricultural scientists of ICAR, the officials of the Meghalaya government agriculture department appraised the trainees about various schemes for better linkages with the packaging industry and marketability of their produce and finally the bank officials helped the trainees to form indigenous turmeric growers group, registering the groups and sanctioning loan.

The training dealt with various aspects of production technology of Lakadong turmeric viz. characteristics and its importance, agro-technique for enhanced production, insect pest and its management, diseases and its control measures. During field practical, the farmers were trained on crop plantation and its production aspects, quality maintenance with improved technology to meet the international and national market demands, techniques for grading, washing, slicing and drying with emphasis on value addition. On the last day the procedures for setting up small enterprise, develop sustainable projects on turmeric production which would enable them to get the loan from financial agencies were explained.

At the end of the training programme the farmers said that prior to the training they did not feel encouraged to grow turmeric because it did not give them the return for the expenditure made for buying the rhizomes for plantation. They bought the good quality rhizomes at the rate of Rs.8-10/- per kilogram but could sell their unprocessed yield only for Rs.5-7/- per kilogram after a period of six months. In this session, the trainees agreed to form Indigenous Turmeric Growers Group (ITGG) for the cultivation of turmeric with improved methods for enhancing their yield with modern packaging. The Meghalaya Cooperative Apex Bank Limited (MCABL), Shillong committed to provide financial assistance for plantation and setting-up processing units after the registration of the ITGGs. The organization of farmers in viable, homogeneous and sustainable groups is a challenge in itself.

The members of the two service cooperative society from Jaintia Hills district who underwent the training formed 3 ITGGs under their respective societies. "*Eiluti*" Self Help Group under the Rud Kupli Service Cooperative Society was formed with 10 members, of which 3 were male and the rest were female. 3 of their members were 12th std pass, 3 members below 10th std drop outs and rest 4 members were illiterate. The group opened a Saving Bank account with Jowai branch of MCABL. After the training programme, the group undertook cultivation of Lakadong turmeric in a new plot of land. The crop was grown as a single crop.

Under Shangpung Service Cooperative Society, 2 Self Help Groups were formed viz. "*Kyntulang*" Self Help Group with 14 members, 6 male and 8 female of which 4 were matriculate and the rest school drop outs. The age group of the members were from 17 to 56 years. "*Shangpung*" Self Help Group with 10 members, 2 were male rest female, 2 of the members 12th std pass and rest school drop outs. The age group varied from 20-55 yrs. Both the groups opened Saving Bank account with Jowai branch of MCABL.

All the 3 groups engaged in the cultivation of turmeric either as single or mixed crop along with maize and beans. The trained farmers were networked with an indigenous entrepreneur having a turmeric processing plant set up with the help of MCABL, where the farmers can take their produce after harvest.

4 farmers from Ri Bhoi district who attended the training planted turmeric in their own land and were provided with micro loan for maintenance and intercultural operation of their field.

B. Post-Harvest follow-up and feedback from the members of the ITGGs and MCABL

Feedback was obtained from the members of the ITGGs after the harvest during April-May 2010.

The statements of the farmers were corroborated by the Managing Director of MCABL who as collaborator with IIVET, had taken the responsibility for the formation and registration of the ITGGs, opening of Saving Bank accounts for the farmers and sanctioning loan of Rs.20000/- to each farmer.

The following feedback from the farmers was documented:

1. The farmers were benefited by the training and they could harvest in a systemic way
2. Two major observations were made by the farmers which needs further intervention:
 - (i). The farmers usually practice traditional mixed crop farming. But during their training emphasis was laid on single crop farming. The farmers on their own experimented with both single crop and mixed crop farming of Lakadong Turmeric after their training. According to them they did not find much difference in the yield between single and mixed crop farming. They suggested that they may continue with their traditional method of mixed crop plantation with maize and beans.
 - (ii). After they planted the rhizomes in May-June 2009 which needs approximately 6 months for harvest which was done in January-February, 2010. There was scanty rainfall in 2009 as a result they feel the yield was less.
Thus the farmers opined that again this year they are going to follow the same practice of both single crop and mixed crop plantation and if there is adequate rainfall they would be able to make a comparison between single crop and mixed crop plantation.
3. The farmers said that rainfall was not adequate last year therefore the yield was not as expected. However they could sell their entire produce at a much higher rate in comparison to earlier years. This they attributed to their knowledge on Post-Harvest Technology acquired during the training.
4. The farmers this time could sell their produce themselves in the local market even without going to an entrepreneur almost at three times the price they had sold earlier. This has encouraged them to take up Lakadong farming in a much larger scale.

The Managing Director, MCABL reported the following:

1. The 3 ITGGs which had been formed and registered last year are functioning well.
2. Many members of the ITGGs have repaid their individual loan of Rs.20000/- and have requested for fresh loan for double the amount they received last year expecting the yield from this year plantation would even be better.
3. Many members who did not repay the entire amount are servicing their loans regularly.

CONCLUSION

There is no doubt that information is crucial in agricultural production, in addition to land, labour and capital. Equally important is formulation of well defined training programmes which help to overcome the phenomenon of "information poverty" which is evident in a wide variety of key activities including indigenous knowledge which is seldom documented and stored and, in some areas is being lost to future generations (Zijp, 1994).

Despite the increased influence of modernization and economic changes, a few traditional agricultural management and knowledge systems are still predominant in certain region - for this case study - Meghalaya in North-East India. Some of the traditional knowledge systems exhibit important elements of sustainability. For example, they are well adapted to particular environments, rely on local resources, are small-scale and decentralized, and tend to conserve the natural resource base.

While it is true that partaking of the information revolution through the use of information technology (IT) offers developing countries a dramatic opportunity to leapfrog into the future and break out of decades of stagnation and decline the developing countries face, but unfortunately this expansion is still largely an urban phenomenon. Rural communities represent the "last mile of connectivity" in both developing and developed countries with regard to access to the information communication technology (ICT) that help transmit those services. People in rural areas are generally unable to take advantage of the services available to their urban peers. IT initiatives for rural development need to be approached with a degree of caution. One cannot expect less privileged farmers and food-insecure residents of rural communities to list computers and digital telecommunication services as high-priority items for improving their lives.

New information technologies will facilitate some forms of education training and information exchange, but will need to be supplemented by other strategies leading to the blended learning approach of the open learning system. No single model or strategy is likely to be sufficient by itself. Despite criticisms of insufficient use of technology, one to one exchange of information and advice, whether from farmer to farmer or from professional adviser to farmer and vice versa, will still continue to be important. Strategy for training of farmers will require serious consideration of factors such as clientele characteristics, the nature of technical messages and physical infrastructure. While distance extension has great potential, it should not be considered as a substitute for conventional extension systems. Instead, it should be used as a supplementary tool, maintaining the focus on the human factor rather than aiming for total dependence on modern IT. The main issue is how to harness the powers of advanced IT, for the benefit of both extension agents and farmers, without compromising the importance of human and unique local factors. An Open Learning System (OLS) incorporates the widest range of teaching strategies, in particular those using independent and individualized learning (Coffey 1977).

Since the indigenous farmers are still to go a long way to become totally self sufficient, regular follow-up, interaction and motivation is a must for the farming success of the indigenous groups. Another step needs to be taken. These farmers may not be able to get patents but they can be educated about Geographical Indicators (GIs). The Lakadong turmeric being the produce of the Lakadong area of the Jaintia Hills of Meghalaya and with its highest curcumin content in the world may at some point of time qualify in the Geographic Indicator List of India.

Finally, it is seen from the cases of indigenous agriculture of Northeast India, the traditional agricultural practices evolved from these knowledge systems are performing well even today without bringing much ecological degradation. Devaluing indigenous knowledge systems (IKS) as "low productive," "primitive," and "old" is no longer a useful attitude. The indigenous knowledge should not be confined to indigenous people alone (Gorjestani 2000) but application of this knowledge can be made wherever necessity arises. Keeping the indigenous knowledge as the basis during the process of developing technologies and innovations would result in the production of sustainable technological options. The blended technologies/ innovations from the two systems should be able to retain the strength of the indigenous knowledge and at the same time be able to derive and demonstrate from the modern science, a good amount of productivity.

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